

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,510,685 B2
APPLICATION NO. : 10/556017
DATED : March 31, 2009
INVENTOR(S) : Torsten Muller, Stefan Hummel and Annete Pfennig

Page 1 of 7

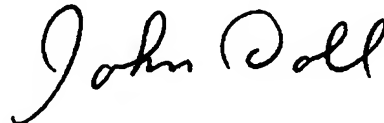
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The title page should be deleted and substitute therefor the attached title page.

Delete Figures 1, 2, 3, 5 and 6 and replace with the Figures 1, 2, 3, 5 and 6 as shown on the attached pages.

Signed and Sealed this

Second Day of June, 2009

A handwritten signature in black ink that reads "John Doll". The signature is written in a cursive style with a large, looped "J" and a stylized "D".

JOHN DOLL
Acting Director of the United States Patent and Trademark Office

(12) **United States Patent**
Müller et al.

(10) **Patent No.:** US 7,510,685 B2
(45) **Date of Patent:** Mar. 31, 2009

(54) **PARTICLE INJECTOR FOR A CELL SORTER**

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(75) **Inventors:** Torsten Müller, Berlin (DE); Stefan Hummel, Haselndorf (DE); Annette Pfennig, Berlin (DE)

(73) **Assignee:** Evotec Technologies GmbH (DE)

(Continued)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 386 days.

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(21) **Appl. No.:** 10/556,017

(22) **PCT Filed:** May 10, 2004

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§ 371 (c)(1),
(2), (4) **Date:** Jan. 23, 2006

(87) **PCT Pub. No.:** WO2004/099760

PCT Pub. Date: Nov. 18, 2004

(65) **Prior Publication Data**
US 2006/0115890 A1 Jun. 1, 2006

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Müller, et al., "A 3-D microelectrode system for handling and caging single cells and particles", *Biosensors & Bioelectronics* 14 (1999), pp. 247-256.

Primary Examiner—Walter D Griffin

Assistant Examiner—Bobby Ramdhanie

(74) **Attorney, Agent, or Firm**—Caesar, Rivise, Bernstein, Cohen & Pokotilow, Ltd.

(57) **ABSTRACT**

The invention relates to a particle injector for introducing particles into a carrier flow of a microfluidic system, especially for injecting biological cells into the carrier flow of a cell sorter. The particle injector includes an inlet for receiving the carrier flow, an outlet for discharging the carrier flow including the introduced particles, a carrier flow channel which connects the inlet to the outlet, and an injection channel flowing into the carrier flow channel for introducing the particles into the carrier flow. The inventive particle injector is characterized in that the carrier flow channel has substantially no dead volume.

(30) **Foreign Application Priority Data**
May 9, 2003 (DE) 103 20 870

(51) **Int. Cl.**
B01L 3/00 (2006.01)

(52) **U.S. CL** 422/99

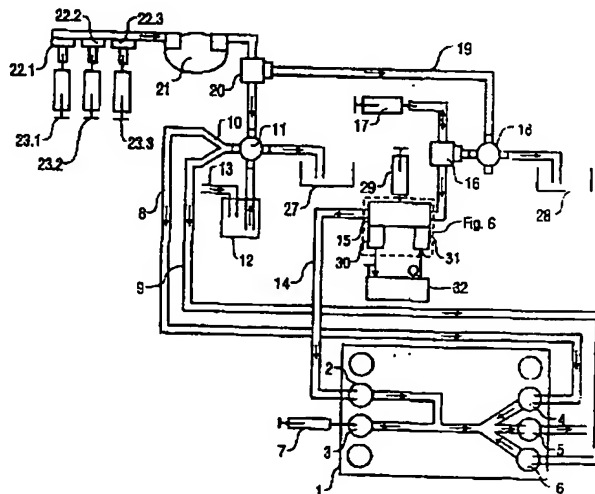
(58) **Field of Classification Search** 422/99
See application file for complete search history.

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21 Claims, 12 Drawing Sheets



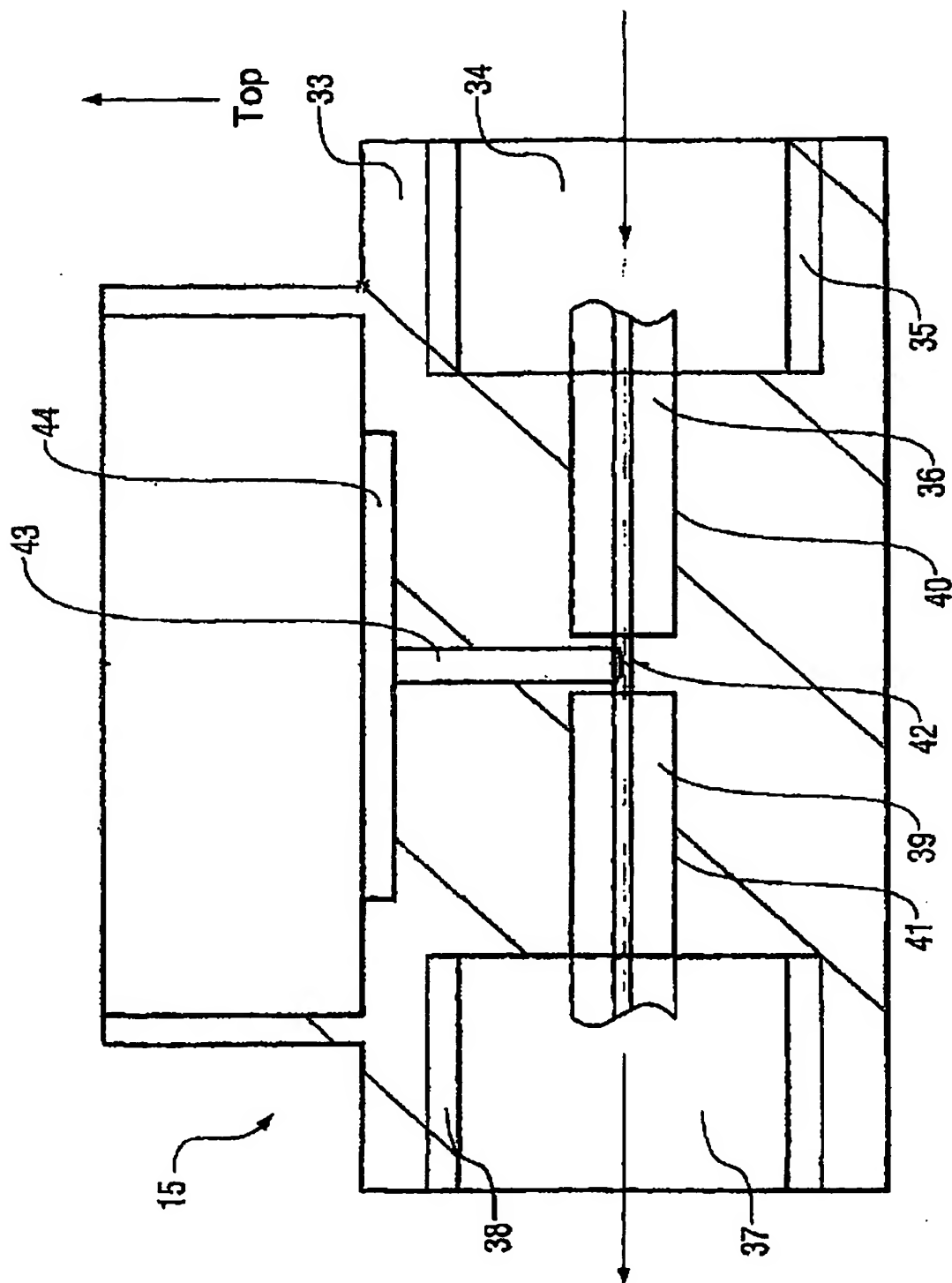


FIG 2

U.S. Patent

Mar. 31, 2009

Sheet 3 of 12

7,510,685 B2

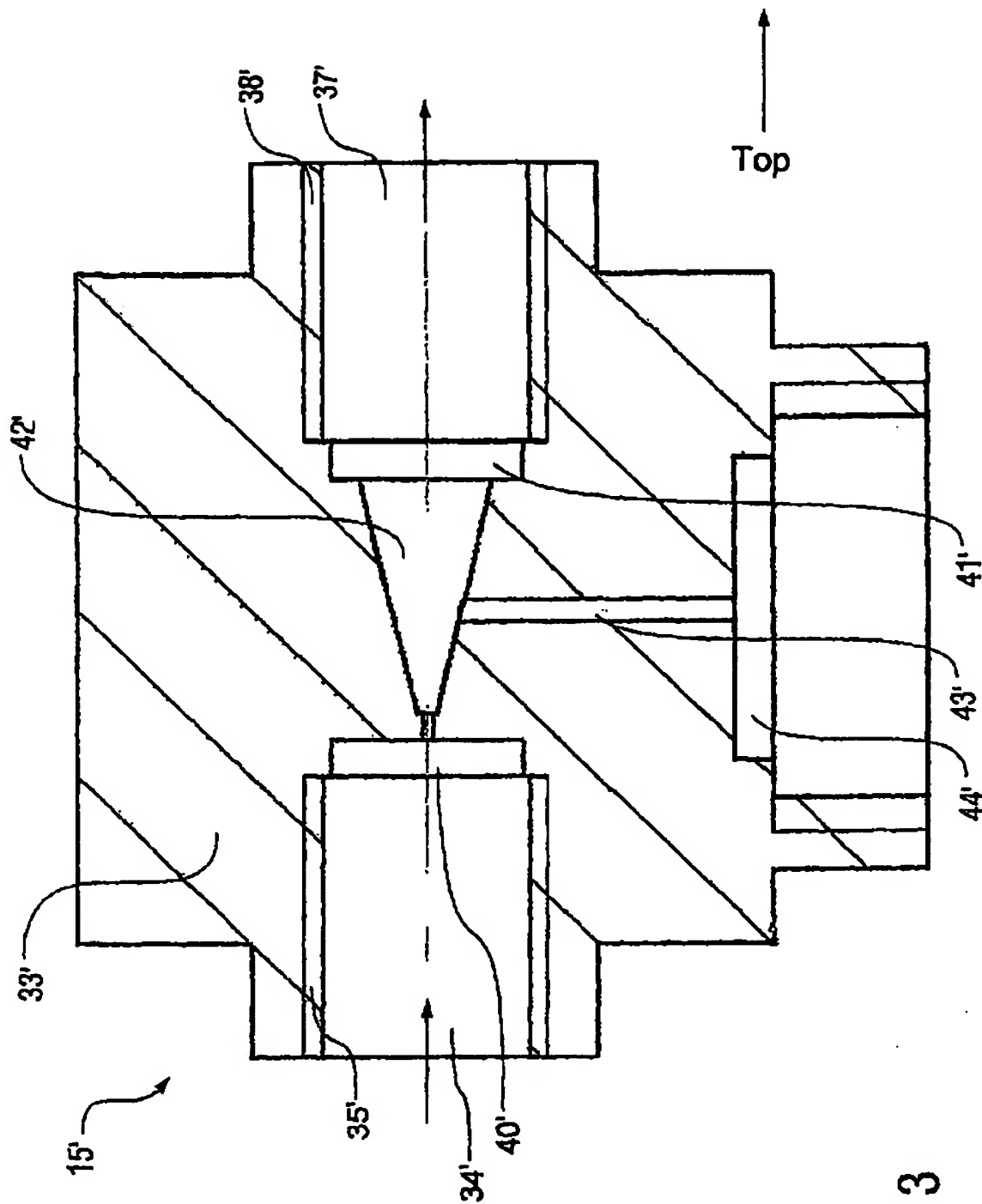


FIG 3

U.S. Patent

Mar. 31, 2009

Sheet 5 of 12

7,510,685 B2

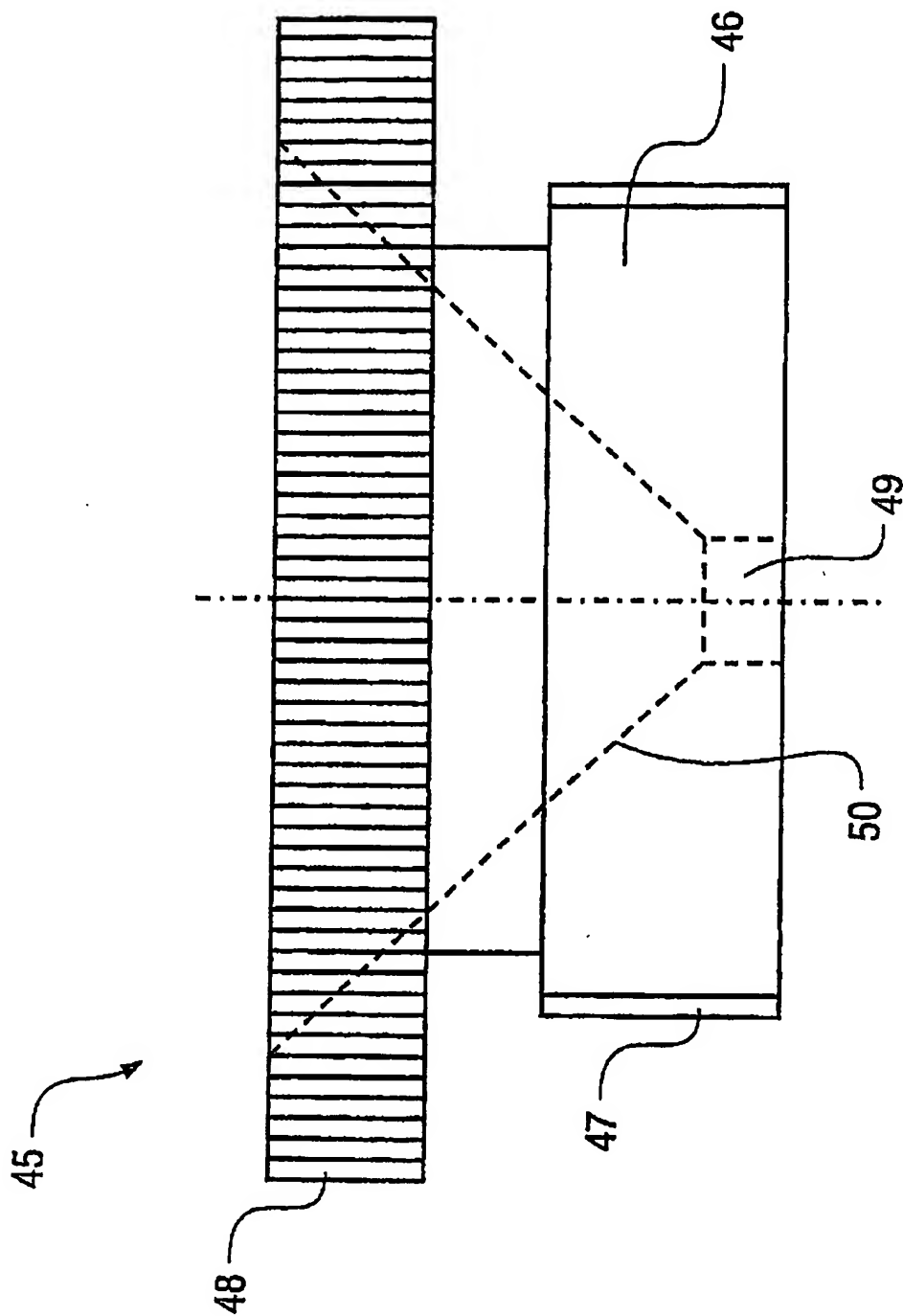


FIG 5

